

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

Avago Technologies General IP PTE Ltd,
et al.,

NO. C 04-05385 JW

Plaintiffs,

**SECOND CLAIM CONSTRUCTION
ORDER**

v.

Elan Microelectronics Corp., et al.,

Defendants.

I. INTRODUCTION

Plaintiffs Avago Technologies General IP PTE Ltd. and Avago Technologies ECBU IP PTE Ltd. (collectively, “Avago”) allege infringement by Defendants Elan Microelectronics Corp. and Elan Information Technology Group (collectively, “Elan”) of U.S. Patent Nos. 5,786,804 (the '804 Patent) and 6,433,780 (the '780 Patent). On August 18, 2006, the Court issued an Order construing the meaning of words and phrases contained in claims of the '804 and '780 Patents. (hereafter, “First Markman,” Docket Item No. 103.) Subsequently, in the course of considering a motion by Elan for summary judgment of non-infringement, the Court determined that further construction of the

Patents was required.¹ The parties submitted their respective briefs and the matter was submitted for decision. This Order sets forth the Court's construction of disputed words and phrases in claims of the '780 and '804 Patents.

II. STANDARDS AND PROCEDURES FOR CLAIM CONSTRUCTION

A. General Principles of Claim Construction

Claim construction is purely a matter of law, to be decided exclusively by the Court. Markman v. Westview Instruments, Inc., 517 U.S. 370, 387 (1996). When the meanings of a word or phrase used in a claim is in dispute, the Court invites the parties to submit their respective proposed definitions and a brief, outlining the basis for their proposed construction. In addition, the Court conducts a hearing to allow oral argument of the respective proposed definitions. After the hearing, the Court takes the matter under submission, and issues an Order construing the meaning of the word or phrase. The Court's construction becomes legally operative meaning which governs further proceedings in the case. Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996).

B. Construction from the View Point of an Ordinarily Skilled Artisan

An invention is defined by the language of the claim. Phillips v. AWH Corp., 415 F.3d 1303, 1322 (Fed. Cir. 2005). In construing the meaning of claim language, the Court does so from the viewpoint of person of ordinary skill in art at the time of the invention. Thus, the Court seeks to construe the patent claim in accordance with what a person of ordinary skill in the art would understand the claim to mean at the time of the invention. The time of the invention is as of the effective filing date of the patent application. Id., at 1312.

The Court proceeds from an understanding that a person of ordinary skill in the art would come to an understanding of the meaning of the language of the claim by interpreting the language in the context of the intrinsic record. The intrinsic record includes the language of the claim itself,

¹ (Order Denying Defendants' Motion for Summary Judgment; Setting Briefing and Further Claim Construction Hearing, Docket Item No. 166.)

1 and any surrounding claims, the written description, the drawings and the prosecution history—if
2 they are in evidence. Teleflex, Inc. v. Fiosa N. Am. Corp., 299 F.3d 1313, 1324 (Fed. Cir. 2002).

3 The Court approaches claim construction with an understanding that a person of ordinary
4 skill in the art reading the intrinsic evidence would give consideration to whether the disputed word
5 is one commonly used in lay language, a technical word or is a word coined by the inventor.

6 **C. Commonly Used Words or Phrases**

7 If the disputed word or phrase is one which is commonly used in ordinary language, the
8 Court considers that a person of ordinary skill in the art would give to it its ordinary and customary
9 meaning, unless a specialized definition is stated in the patent specification or was stated by the
10 inventor during prosecution of the patent. In articulating the ordinary and customary definition of a
11 word which is commonly used in the English language, the Court may consult a general purpose
12 dictionary. Phillips, 415 F.3d at 1314.

13 However, an inventor is free to act as his own lexicographer. Thus, acting as a
14 lexicographer, the inventor may use a word or phrase differently than with its ordinary and
15 customary meaning. Vitronics Corp., 90 F.3d at 1582. The Court examines the claim and other
16 parts of the patent specification to determine if the inventor used the word with a specialized
17 meaning.

18 A statement made by the inventor in the prosecution of the patent application as to the scope
19 of the invention may be considered as evidence of what meaning to give to a word or phrase of a
20 claim. Microsoft Corp. v. Multi-Tech Systems, Inc., 357 F.3d 1340, 1349 (2004). If it is in
21 evidence, the Court examines the prosecution history of the patent for any specialized definition of a
22 word or phrase used in a claim. A specialized definition clearly stated in the specification or during
23 prosecution of a particular word or phrase is regarded by the Court as highly persuasive of the
24 meaning of the word or phrase when it is used in a claim. Phillips, 415 F.3d at 1322.

D. Technical Words or Phrases

If the disputed word or phrase is a commonly used technical term in the field of the invention, the Court considers that one of skill in the art would give the word or phrase its ordinary and customary meaning in that technical field, unless a specialized definition is stated in the specification or was given to it during prosecution of the patent. In arriving at a definition, the Court may consult a technical art-specific dictionary or invite the parties to present testimony from experts in the field on the customary definition of the technical word or phrase. Id.

E. Coined Words or Phrases

If the disputed word or phrase is coined by the inventor, the definition must be clearly stated in the patent documents. Vitronics Corp., 90 F.3d at 1582. If a definition of a coined word or phrase is not clearly stated or cannot be reasonably inferred, the Court may decline to construe the word pending further proceedings.

The Court recognizes that in the claim construction process, the Court is able to consider a number of extrinsic sources in any sequence it desires so long as it does not adopt a construction based on extrinsic evidence which contradicts the unambiguous meaning of a claim given in the intrinsic evidence. Phillips, 415 F.3d at 1324.

F. Declining to Construe a Word or Phrase

If the Court is not able to come to a construction of any disputed word or phrase, the Court may decline to state a construction and may invite the parties to request a further hearing to address the matter.

G. Stipulated Meanings of Words or Phrases

If the parties have agreed on the construction of a word or phrase and so stipulated in a statement to the Court, the Court may at any time re-construe the word or phrase, should it become clear that the intrinsic evidence does not support the agreed upon construction. If the intrinsic evidence does not explicitly define such words or phrases, the plain and ordinary meaning of such

words or phrases as understood by someone skilled in the art would be used to determine if the agreed upon term is consistent with such understanding.

III. DISCUSSION

A. The '804 Patent - Claim 14

Claim 14 is the only Claim of the '804 Patent which is the subject of this supplemental Order. Claim 14 provides:

A method of controlling movement of a cursor of a video display comprising steps of:
 providing a hand-holdable device having a two-dimensional array of
 photosensors;
 tracking movement of said device relative to a region of an environment in
 which said device resides, including substeps of:
 (a) **periodically forming largely overlapping images of a
 field of view of said array;**
 (b) storing a first image as a reference image;
 (c) correlating said images such that changes in location of
 characteristics of said region within successive images are
 computationally recognized;
 in response to said substeps (a), (b) and (c), forming a cursor-control signal
 that corresponds to computational recognition of said changes in location; and
 transmitting said cursor-control signal to said video display.

1. Reconsideration of construction of Claim 14

Claim 14 was addressed in the Court's First Markman Order. That construction did not address all of the elements of the Claim. This Order reconsiders the construction of Claim 14 and supersedes the First Markman Order with respect to Claim 14.

Claim 14 discloses a method for controlling the movement of a cursor of a video display. The method comprises four steps, which may be summarized as follows: (1) providing a hand-holdable device which has a two-dimensional array of photosensors; (2) tracking movement of the device in the environment; (3) forming a cursor-control signal which corresponds to the movement which is tracked in step (2); and (4) transmitting the cursor-control signal to the video display.

2. Step (1): The "providing a hand-holdable device step," imposes a structural limitation on each element of Claim 14

Step (1) of the method recites a particular structure for performing the method, namely, "a hand-holdable device having a two-dimensional array of photosensors." When a method claim

includes as one of its elements a particular structure, unless the language of the claim provides otherwise, the structure is a limitation on the claim. See Moleculon Research Corp. v. CBS, Inc., 793 F.2d 1261 (Fed Cir. 1986). Based on the language of Claim 14, the Court finds that the method is limited to a particular apparatus: “a hand-holdable device having a two-dimensional array of photosensors.”

3. Step (2): The Tracking Step

Step (2) of the method provides: tracking movement of said device relative to a region of an environment in which said device resides. The “tracking movement” step includes three substeps. Substep (a) is: “periodically forming largely overlapping images of a field of view of said array.” The parties dispute the construction of this substep. To arrive at a construction, the Court begins by giving separate consideration to the words and phrases of the substep.

a. “said array”

Substep (a) claims as part of the “tracking movement” step, periodically forming largely overlapping images of a field of view of “said array.” When an element uses the word “said,” it is referring back to a device already disclosed. See Nautilus Group, Inc. v. Icon Health and Fitness, Inc., 308 F. Supp. 2d 1198 (citing Process Control Corp. v. HydReclaim Corp., 190 F.3d 1350, 1356 (Fed. Cir. 1999), cert. denied, 529 U.S. 1037 (2000)). The phrase “said array” refers to the “two-dimensional array of photosensors” of the device disclosed in step (1).

In the section of the written description entitled “Best Mode for Carrying Out the Invention,” the inventor describes an embodiment of the array of photosensors of the invention as follows:

With reference to FIG. 1, a hand-holdable controller device 10 is shown as including an integrated circuit package 12 for acquiring and processing image data. On the surface of the package is an **optoelectric integrated circuit chip 14 having a two-dimensional array 16 of photosensors and having processing circuitry 18**. The array and processing circuitry are used to acquire successive frames of image data, permitting the attitude of the device to be tracked.

(’804 Patent, Col. 5:3-11.)

A person of ordinary skill in the art would understand that the inventor of the ’804 Patent is using the phrase “said array” to mean the two-dimensional array of photosensors and associated

1 circuitry of the hand-held device. Although the written description discusses a 32 X 32 array², the
2 device is not limited to an array of a particular size.

3 **b. “field of view”**

4 In the field of optics, “field of view” has a commonly understood meaning to persons of skill
5 in the art. The Court examines the patent documents to determine if the inventors used the phrase in
6 any specialized way. In the written description, the inventor uses the phrase “field of view” to
7 describe the environment which is detectable by the full photosensor array.

8 The sensor array and the processing circuitry 18 are mounted on the front of the
9 controller device 10 with the array facing outwardly. A lens 26 is shown in FIG. 1 as
10 being partially sutaway in order to expose the array and circuitry. The lens may be an
11 inexpensive plastic lens that is molded to the integrated circuit package 12. The
12 focus of the lens is set nominally at infinity. The lens provides an image of **a region
of the surrounding environment** to the sensor array 16.

13 ('804 Patent, Col. 5:23-30.)

14 The width of the **field of view for imaging the environment** is a matter of balancing
15 the desire of capturing as much visible detail as possible with the requirement of
16 avoiding excessive distortion. A 64° field of view provides a reasonable compromise
17 between the two concerns. The dashed lines 28 in FIG. 1 represent the field of view
18 for the sensor array 16. The arrangement of the optics and the sensor array may be
19 selected to reduce any adverse effects of curvilinear distortion of the attitude-tracking
20 approach of the invention.

21 ('804 Patent, Col. 5:38-47.)

22 The inventor also uses the phrase “field of view” when discussing the environment which is
23 detectable by each individual photosensor:

24 As previously noted, the field of view 28 is contemplated to be approximately 64°.
25 In a sensor array of 32X32 photosensors, **a single pixel will have an approximately
2° field of view (64°/32 pixels).**

26 ('804 Patent, Col. 6:34-37)

27 In both instances the inventor is using the phrase with its customary and ordinary meaning.
28 A person of ordinary skill in the art would understand that the inventor used the phrase “field of

² ('804 Patent, Col. 8:21-24.)

view” to mean the region of the environment optoelectrically detectable by the array of photosensors.

c. “periodically . . . forming largely overlapping images”

Substep (a) discloses “periodically forming largely overlapping images of a field of view of said array.” The '804 Patent includes drawings and written descriptions in which the inventor discusses what is meant by “periodically” forming largely overlapping images:

Referring now to FIGS. 1 and 2, a control clock 36 determines the timing of operations for the controller device 10. The **image-capture rate** is at least partially determined by the features that are to be imaged. Where the field of view 28 is a living room of a person engaged in operation of an ITV system, the image capture rate must be sufficiently great to ensure that **the image data** is sufficiently intelligible to permit correlation between successive images. The circuitry of FIG. 2 includes an exposure control 38 which shows a minimum exposure of 5 μ s and a maximum exposure of 5 ms. **Electronically, the “exposure time” is the interval during which charge generated by the individual photosensors is allowed to integrate during the 5 ms period between successive image captures.**

('804 Patent, Col. 6:14-33.)

A person of ordinary skill in the art would understand that the word “periodically . . . forming largely overlapping images” refers to a process in which a device takes multiple separate optoelectric readings of the environment and at such frequency that the areas being read overlap one another.

d. “forming . . . images”

Substep (a) discloses “forming images” in execution of the substep. Although the word “forming” is not used in the written description, the inventor discusses embodiments of the invention which “capture” and “process” “image data.”

The word “images” is a general term with many meanings, which depend on how the images are created. Therefore, with respect to the '804 Patent, the word “images” must be defined in a manner which recognizes that the “images” are formed using a photosensor array and associated circuitry³.

³ ('804 Patent, Col. 5:9.)

One of ordinary skill in the art would know that each photosensor in an array responds to gradations of environmental light and the array's associated circuitry converts the light from each photosensor into an electrical voltage. The Court examines the written description to determine what the inventor meant by the phrase "forming images" from voltages from a photosensor array.

FIG. 3 is disclosed as a diagram of the array of photosensors⁴ and transfer amplifiers labeled "SENSOR ARRAY" in the FIG. 2 block diagram:

As previously noted, the embodiment of FIGS. 1 and 2 includes a sensor array 16 having thirty-two columns and thirty-two rows of photosensors. Referring now to FIG. 3, five columns 74, 75, 76, 77 and 78 of the thirty-two columns of photosensors are shown. Also shown are six of the thirty-two rows 79, 80, 81, 82, 83 and 84. Each column is operatively associated with a separate transfer amplifier 85. A photosensor in a column is connected to the operatively associated transfer amplifier for closing a read switch 86. In the operation of the circuitry of FIG. 3, no two photosensors are connected to the same transfer amplifier simultaneously.

Each transfer amplifier 85 includes an input 87 that is connected to a source of a fixed voltage. A second input 88 is capacitively connected to the output 90 of the transfer amplifier by a transfer capacitor 89.

In the operation of the circuit of FIG. 3, the read switches 86 of the first row 79 of photosensors may be closed, so that each transfer capacitor 89 receives **a charge corresponding to the light energy at the associated photosensor** in the first row. Thus, the transfer amplifiers 85 and the transfer capacitors 89 function as integrators. **The received charge is transferred to subsequent processing circuitry via the output lines 90.** Following the readout of the first row, the read switches of the first row are opened and the transfer amplifiers are reset. The read switches of the second row 80 are then closed in order to transfer the signals from the photosensors of the second row. The process is repeated until each row of photosensors is read. By the operation of the transfer amplifiers 85, photosensor signals are transferred in a row-by-row fashion to subsequent circuitry.

('804 Patent, Col. 8:21-51.)

As described in this passage, the physical environment is "imaged" by the photosensor array and its associated circuitry. The "images" which are formed depend upon the components of the associated circuitry. Neither Claim 14 nor the written description contain complete details of the

⁴ The '804 Patent states: "FIG. 3 is a block diagram of an array of photosensors and transfer amplifiers of the correlator of FIG. 2." Read literally, this could be interpreted as disclosing that the photosensors are part of the correlator. However, FIG. 2 shows the photosensors array as a separate component from the correlator. The written description and the drawing disclose that a transfer amplifier 85 is connected to a photosensor. The amplified signal is then sent to subsequent circuitry, including the correlator.

1 “subsequent circuitry” which acquires and forms the images. However, the inventor discloses
2 details about the embodiment of circuitry for carrying out the “storing” and “correlation” substeps.
3 The Court examines those descriptions to see if they provide assistance in construing what the
4 inventor meant by “forming images.”

5 Substep (b) discloses “storing” a “first image” as a “reference frame.” This is helpful
6 because the inventor states that the circuitry of substep (a) “forms” “images,” and the circuitry of
7 substep (b) stores one of the images as a “reference frame.” The Court presumes that the images
8 which are stored as a “reference frame” have identical characteristics to the images which are
9 formed. The written description discloses that the inventor uses the word “frame” to mean a
10 collection of “pixel values” from a particular optical acquisition:

11 The sensor array 16 is used to acquire a **frame** of 32 X32 **pixel values**. The first
12 captured frame is referred to as a **reference frame**.

13 ('804 Patent, Col. 6:51-52.)

14 The phrase “pixel value” is a phrase coined by the inventor. If the disputed word or phrase is
15 coined by the inventor, the definition must be clearly stated in the patent documents. Vitronics
16 Corp., 90 F.3d at 1582. In the written description, the inventor defines “pixel value” as a voltage
17 which is created from processing the input from a photosensor or group of photosensors⁵ in an array
18 and which is stored in the circuitry associated of that particular photosensor or group of
19 photosensors. Thus, “pixel value” is a phrase which indicates size, intensity and location. The
20 Court will discuss how it arrives at that construction.

21 The word “pixel” is a commonly used term in computer graphics which means one picture
22 element in a rectilinear grid of multiple such elements which can be manipulated by a computer to
23 display characters or graphics. See Microsoft Computer Dictionary, 406 (5th ed. 2002). The

24 ⁵ In describing FIG. 6, the written description uses conditional language: “If there is a one-
25 to-one correspondence of computation cells and photosensors, the embodiment of FIGS. 1-3 will
26 have 1,024 computation cells.” This suggests that the circuitry could have a many-to-one
27 relationship between photosensors and a computation cell. This is significant because if there is not
28 a one-to-one relationship, conceivably, a pixel value may represent the output of more than one
photosensor.

inventor coined the phrase “pixel value” to signify that tracking the movement of the “device” is done computationally on a sensor-by-sensor basis, similarly to how movement is displayed on a computer monitor on a pixel-by-pixel basis:

[E]ach pixel value is indicative of light energy received at **a particular photosensor** at a specific time.

(’804 Patent, Col. 3:49-59.)⁶

Just as pixels in computer graphics are elements on an X -Y axis, the inventor coined the phrase “pixel value” to signify that computationally , each “pixel value” has a known location on an X - Y axis of the array. The content of each cell⁷ of the array is a voltage generated by the circuitry:

Loading a reference frame of pixel values is required before any image correlations can be calculated. To load the reference frame, all of the **voltages** at the CDATA nodes 104 in the computational array must be transferred to the REFH nodes 134.

(’804 Patent, Col. 11:47-51.)

After the voltages are stored, the correlation process involves computational comparisons between the electrical values stored in the reference frame with the values generated by photosensor captures of overlapping areas and stored in sample frames:

The correlation processing generates an attitudinal signal indicative of any changes in angular orientation of the controller device 10. In FIG. 2, the correlator 42 is shown as generating a signal in which **change along the X axis is +0.75 pixels, while the change along the Y axis is -0.31 pixels.** In FIG. 1, positive movement along the X axis may be indicated as a result of angular displacement of the device 10 such that the field of view 28 is moved in the direction of arrow 44, while a negative movement along the X axis is one in which a component of displacement of the field of view 28 is in the direction indicated by arrow 46. Regarding the Y axis, a positive value at the attitudinal signal indicates manipulation of the device 10 to rotate the field of view as shown by arrow 48, while a negative value of .DELTA.Y indicates displacement in the direction shown by arrow 50.

The preferred approach for operation of the correlator 42 is one in which nearest-neighbor pixel shifts are executed in order to track changes in attitude of the

⁶ The Court relies on Claim 9 as further support that the inventor used the word “image” to mean a periodically acquired set of pixel values. In Claim 9, the inventor discloses “. . .storage means connected to said array for storing a reference frame of pixel values in which each pixel values is indicative of light energy received at a particular photosensor at a specified time... .”

⁷ The inventor used the phrase “pixel cell” to describe to place where the voltages are stored. (See ’804 Patent, Col. 10:14.) The Court noted earlier that a “cell” is described as capable of holding the voltages of more than one photosensor, depending on the layout of the circuit.

controller device. This approach will be detailed when referring to FIGS. 4, 5 and 6. However, the attitude tracking alternatively may be carried out using correlations requiring shifts of greater than a single pixel. For either approach, interpolations are computationally performed to identify fractional pixel values. Such image correlating interpolating is well understood by persons skilled in the art.

('804 Patent, Col. 7:6-30.)

Therefore, the Court construes the phrase “periodically forming largely overlapping images of a field of view of said array” to mean: **Acquiring optoelectric signals from an array of photosensors and, using circuitry, converting the signals to values which represent the field of view to which the array is being exposed at discrete points in time. The substep of forming an image is not otherwise limited to any particular process. This substep includes processing of the signals from acquisition up to but not including storing as a frame.**

In its motion for summary judgment of non-infringement, Defendant Elan contended that the accused device does not literally infringe Claim 14 of the '804 Patent because what is stored is “filtered.” If Elan maintains this same position under the construction contained in this Order, the Court invites Elan to renew its motion.

B. The '780 Patent - Claim 4

Claim 4 provides:

A hand held pointing device for a computer system, the pointing device comprising:
 a housing having a bottom surface that moves against a work surface; the housing also having a top surface shaped to receive the human hand;
 the housing also having a skirt connecting a perimeter of the bottom surface with the top surface;
 the housing also having a first axis extending generally in the direction from where the heel of the hand rests on the top surface to where the middle finger rests on the top surface, and a second axis perpendicular to the first, both axes parallel to the bottom surface;
 an aperture in the bottom surface;
 a source of illumination mounted within the interior of the housing, proximate the aperture, that illuminates a portion of the work surface opposite the aperture and having surface height irregularities forming a micro texture with feature sizes in the range of about five to five hundred microns, the illumination producing a pattern of highlights upon surface height irregularities that extend out of the desktop surface and that intercept the illumination and of shadows upon surface height irregularities that extend into the desktop surface and whose illumination is blocked by adjacent surface height irregularities that are illuminated;
 an optical motion detection circuit mounted within the interior of the housing and optically coupled to the pattern of highlights and shadows from the surface height

irregularities of the illuminated portion of the work surface, the optical motion detection circuit producing motion signals indicative of motion in the directions along the first and second axes and relative to the surface height irregularities of the illuminated portion of the work surface;

wherein the optical motion detection circuit comprises **a plurality of photo detectors each having an output, a memory containing a reference frame of digitized photo detector output values** and a sample frame of digitized photo detector output values obtained subsequent to the reference frame, and further wherein a plurality of comparison frames, each being a shifted version of one of the reference frame or the sample frame, is correlated with the other of the reference frame or the sample frame to produce a corresponding plurality of correlation values and ascertain motion in the directions along the first and second axes;

and an arithmetic comparison mechanism coupled to the plurality of correlation values, and wherein the motion signals are not output to the computer system whenever a correlation surface described by the plurality of correlation values fails to exhibit a selected curvature.

The parties dispute the construction of the phrase: “a plurality of photo detectors each having an output, a memory containing a reference frame of digitized photo detector output values.”

To determine a construction, the Court considers the constituents of the phrase.

1. “a plurality of photo detectors”

The '780 Patent claims as an invention a “Seeing Eye Mouse for a Computer System.” In the “Summary of the Invention” the inventors disclose that the invention is an “optical” mouse, which “detects motion by directly imaging as an array of pixels the various particular spatial features of a work surface below the mouse.” (Col. 3:1-3.) In the written description, an embodiment of the “photo detectors” is described as follows:

The photo detectors may comprise a square array of say, 12 to 24 detectors on a side, each detector being a photo transistor whose photo sensitive region is 45 by 45 microns and of 60 microns center to center spacing.

('780 Patent, Col. 8:48-52.)

Although, the size and layout of the embodiment are not limitations on the Claim, one of ordinary skill in the relevant art would understand from reading the patent documents that by “plurality of photo detectors” the inventors meant a semiconductor device which generates an electrical signal in response to light.

1 **2. “each having an output”**

2 The plain meaning of the phrase, “each having an output,” to one of ordinary skill in the
3 relevant art is that there is a one-to-one connection between each photodetector and an input to
4 something else.

5 **3. “a memory”**

6 The plain meaning of the phrase, “a memory,” to one of ordinary skill in the relevant art is
7 that the circuitry of the mouse contains a device where information can be stored and retrieved.

8 **4. “containing a . . . frame of . . . output values”**

9 The phrase “containing a . . . frame of . . . output values” is a limitation on the memory
10 component. There are two aspects of how the phrase is worded which require attention. First, one
11 of ordinary skill in the relevant art would understand that “a . . . frame of . . . output values” is a
12 phrase coined by the inventors to describe a collection of data. The optical mouse of the invention
13 detects movement and direction of movement of the mouse on a surface by comparing successive
14 optical images of the surface. In the Summary, the inventors disclose:

15 The responses of the individual photo detectors are digitized to a suitable resolution
16 (say, six or eight bits) and stored as a frame into corresponding locations within a
array of memory.

17 ('780 Patent, Col.3:30-34.) One of ordinary skill in the relevant art would understand that the word
18 “array,” in the computer data processing context means: a list of data values, all of the same type,
19 any element of which can be referenced by an expression consisting of the array name followed by
20 an indexing expression. See Microsoft Computer Dictionary, 35 (5th ed. 2002). The inventors are
21 using the word “frame” to refer to storage, as an array in memory, of individual values which
22 represent the response of each photo detector to a surface at a given point in time.

A second aspect of the phrase is the inventors' use of the stative verb⁸ "containing" in combination with a description of data generated from using the device as a limitation on the device, itself. Claim 4 is a patent on the device as opposed to a patent drawn to the functionality of a device. Nevertheless, in the element under consideration, the inventors describe the device as already containing data, namely, "a reference frame of digitized . . . output values," "a sample frame of . . . output values" and "a plurality of comparison frames."

Ordinarily, in a claim, a description of the structure of a device is a limitation on the device. If a stative verb is used to describe the structure, the condition being described is an inherent, unchanging part of the structure. Thus, for example, a patent claim element which states "a circuit containing three transistors," limits the element to a circuit having three transistors. In the element of Claim 4 under consideration, the inventors disclose a circuit which comprises "a memory containing a reference frame of digitized photo detector output values." The literal language requires the reference frame to be an existing part of the "memory." The written description discloses that the values are not an inherent part of the memory. The "output values" only become a part of the memory if the device is used. For the time being, subject to further consideration, the Court will treat the stative word "containing" to mean "**having the capability of containing**." The Court invites the parties to address this issue in subsequent proceedings.

5. "digitized photo detector output values"

The final component of the phrase under consideration is "digitized photo detector output values." The Summary states:

The responses of the individual photo detectors are **digitized** to a suitable resolution (say, six or eight bits) and stored as a frame into corresponding locations within a array of memory.

('780 Patent, Col.3:30-34.)

⁸ Verbs in English are classified into two categories: dynamic and stative. Dynamic verbs (commonly referred to as "action verbs") usually describe actions that happen. Stative verbs usually refer to a state or condition which is not changing or likely to change. Stative verbs can refer to the relationship between two things. The word "contain" is a stative verb when used in the sentence "the box contains 12 cans of soda." The ending "ing" when added to a dynamic verb usually describes an on-going action (e.g., swimming, passing, heating). When "ing" is added to a stative verb, it usually describes an on-going state of being (having, owing, containing).

The emphasized phrases clarify that the “responses” (i.e., outputs) of each photo detector is “digitized.” A person of ordinary skill in the art would understand that by the word “digitized” the inventors meant that the output voltage⁹ of each photo detector is converted to a binary number.¹⁰ By their use of the word “corresponding,” one of ordinary skill in the art would understand that the inventors intended that what was to be stored in each cell of the frame was a binary number representing the voltage output by each photo detector.

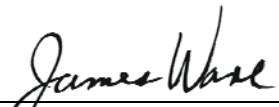
Therefore, the Court construes the phrase “a plurality of photo detectors each having an output, a memory containing a reference frame of digitized photo detector output values,” to mean: **“a device in which the voltage from each photo detector is converted to a binary number, which number is stored in memory in an array.”**

Similarly to the contentions made with respect to Claim 14 of the '804 Patent, the parties dispute whether this claim element is met if what is stored in memory are output values which have been “filtered.” The word “filtered” is a broad term with many definitions depending on the context of its use. The Court invites any renew motions made prior to this Order.

IV. CONCLUSION

In this Order the Court has construed some of the words and phrases of the '804 and '780 Patents. To the extent a party believes that further claim construction is necessary, the Court invites that party to submit a timely request to that effect.

Dated: June 13, 2007


 JAMES WARE
 United States District Judge

⁹ The written description discloses that each photo detector outputs a voltage which is digitized: “The photo transistors charge capacitors whose voltages are subsequently digitized and stored in memory.” (’780 Patent, Col.8:53-55.)

¹⁰ A “digit” is any whole unit in a numbering system. See Microsoft Computer Dictionary, 157 (5th ed. 2002). Since the patent discloses that the output values are stored in computer “memory,” one of ordinary skill in the art would understand that the digitized value would be expressed in binary digits, a form storable in computer memory. The description of a preferred embodiment expresses the digitized value in bits. (’780 Patent, Col.3:30-34.)

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